

CLAIMS

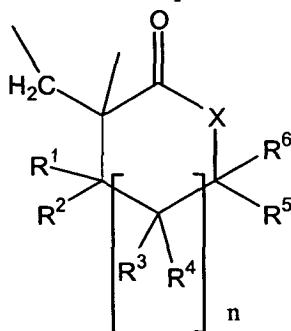
What is claimed is:

1. A composition, comprising:

(a) a first polymer comprising the repeat units:

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(i) at least about 10 mole percent of the total repeat units of



(I)

(ii) at least about 0.1 mole percent of a repeat unit containing a first reactive functional group;

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(iii) up to about 89.9 mole percent of repeat units derived from one or more monomers which are free radically copolymerizable with (a)(i) and (a)(ii); and

(b) about 1 weight percent to about 50 weight percent based on the total weight of (a) and (b), of a second polymer which is elastomeric and contains a second reactive functional group which may react with said first reactive functional group;

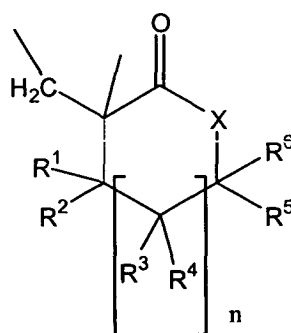
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or

(c) a third polymer comprising the repeat units

(i) at least about 10 mole percent of the total repeat units of

20



(I)

(ii) up to about 90 mole percent of repeat units derived from one or more monomers which are free radically copolymerizable with (b)(i); and

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(d) about 1 percent by weight to about 60 percent by weight based on the total weight of (c) and (d), of a fourth polymer which is core-shell particles made up of an elastomeric polymer core and a polymeric thermoplastic shell, said thermoplastic shell comprising repeat units derived from methyl methacrylate;

wherein:

n is 0, 1 or 2;

X is -O- or -NR<sup>9</sup>-; and

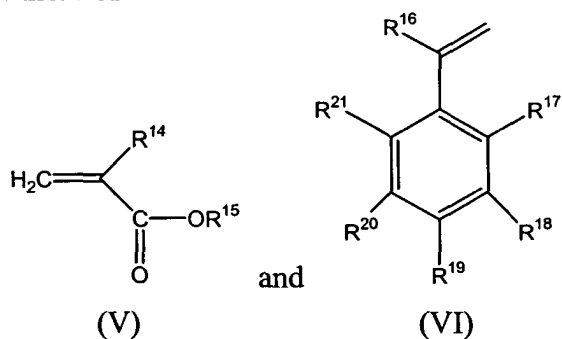
R<sup>1</sup>, R<sup>2</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>9</sup>, each of R<sup>3</sup>, and each of R<sup>4</sup>, are independently hydrogen, a functional group, hydrocarbyl or substituted hydrocarbyl.

2. The composition as recited in Claim 1 wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> are all independently hydrogen or alkyl containing 1 to 6 carbon atoms, and X is oxygen.

3. The composition as recited in Claim 2 wherein n is 0.

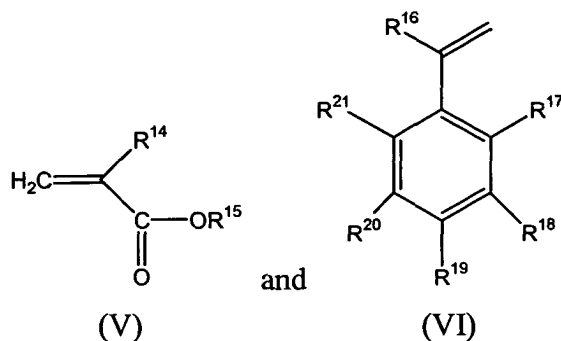
4. The composition as recited in Claim 3 wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> are all hydrogen.

5. The composition as recited in Claim 1 wherein (a)(iii) or (c)(ii) are derived from one or more of



wherein R<sup>14</sup> is hydrogen or methyl, R<sup>15</sup> is hydrocarbyl or substituted hydrocarbyl, and R<sup>16</sup> is hydrogen or methyl, and R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup> and R<sup>21</sup> are each independently hydrogen, hydrocarbyl substituted hydrocarbyl or a functional group.

6. The composition as recited in Claim 4 wherein (a)(iii) or (c)(ii) are derived from one or more of



wherein R<sup>14</sup> is hydrogen or methyl, R<sup>15</sup> is hydrocarbyl or substituted hydrocarbyl, and R<sup>16</sup> is hydrogen or methyl, and R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup> and R<sup>21</sup> are each independently hydrogen, hydrocarbyl substituted hydrocarbyl or a functional group.

7. The composition as recited in Claim 1 wherein (a)(iii) or (c)(ii) are derived from methyl methacrylate and optionally other copolymerizable monomers.

8. The composition as recited in Claim 1 which comprises said first and said second polymers, wherein said first and second polymers contain one of an epoxy, carboxylic anhydride, isocyanato, hydroxyl, amino or carboxyl group.

9. The composition as recited in Claim 8 wherein said first polymer contains about 0.1 to about 25 mole percent of repeat unit (a)(ii), and said second polymer contains about 0.01 to about 1.5 moles of second reactive group per kg of said second polymer.

10. The composition as recited in Claim 8 wherein said second polymer is a copolymer of ethylene, an alkyl acrylate and glycidyl acrylate or methacrylate.

11. The composition as recited in Claim 4 which comprises said first and said second polymers, wherein said first and second polymer contain one of an epoxy, carboxylic anhydride, isocyanato, hydroxyl, amino or carboxyl group.

12. The composition as recited in Claim 11 wherein said first polymer contains about 0.1 to about 25 mole percent of repeat unit (a)(ii), and said second polymer contains about 0.01 to about 1.5 moles of second reactive group per kg of said second polymer.

13. The composition as recited in Claim 11 wherein said second polymer is a copolymer of ethylene, an alkyl acrylate and glycidyl acrylate or methacrylate.

14. The composition as recited in Claim 1 which comprises said third and fourth polymers, and said fourth polymer is a core-shell polymer in which at least 50 mole percent of the repeat units in said shell are derived from methyl methacrylate.

15. The composition as recited in Claim 14 wherein said core is elected from the group consisting of poly(1,3-butadiene-co-styrene) and an alkyl acrylate wherein said alkyl contains 2 to 4 carbon atoms.

16. The composition as recited in Claim 1 which comprises said third and fourth polymers and is transparent, as measured by ASTM Method D1003.

17. The composition as recited in Claim 4 which comprises said third and fourth polymers, and said fourth polymer is a core-shell polymer in which at least 50 mole percent of the repeat units in said shell are derived from methyl methacrylate.

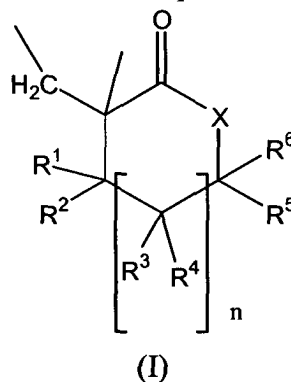
18. The composition as recited in Claim 17 wherein said core is elected from the group consisting of poly(1,3-butadiene-co-styrene) and an alkyl acrylate wherein said alkyl contains 2 to 4 carbon atoms.

19. The composition as recited in Claim 4 which comprises said third and fourth polymers and is transparent, as measured by ASTM Method D1003.

20. A composition, comprising:

(e) a fifth polymer comprising the repeat units:

(i) at least about 10 mole percent of the total repeat units of



(ii) optionally a repeat unit containing a third reactive functional group;

(iii) up to about 90 mole percent of repeat units derived from one or more monomers which are free radically copolymerizable with (e)(i), and (e)(ii), if present; and

(f) a sixth polymer which is a thermoplastic and which may optionally containing one or more fourth reactive functional groups which may react with said third functional group;

provided that in said composition (b) is present as a continuous or cocontinuous phase and (a) is present as a dispersed or cocontinuous phase;

and wherein:

n is 0, 1 or 2;

X is -O- or -NR<sup>9</sup>-; and

R<sup>1</sup>, R<sup>2</sup>, R<sup>5</sup>, R<sup>6</sup>, each of R<sup>3</sup>, and each R<sup>4</sup>, are independently hydrogen, a functional group, hydrocarbyl or substituted hydrocarbyl; and

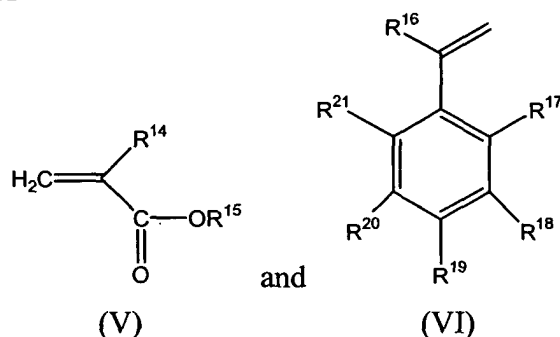
R<sup>9</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl.

21. The composition as recited in Claim 20 wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> are all independently hydrogen or alkyl containing 1 to 6 carbon atoms, and X is -O-.

22. The composition as recited in Claim 21 wherein n is 0.

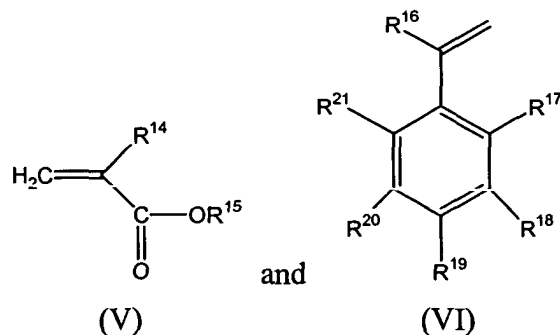
23. The composition as recited in Claim 22 wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> are all hydrogen.

24. The composition as recited in Claim 20 wherein (e)(iii) is derived from one or more of



wherein R<sup>14</sup> is hydrogen or methyl, R<sup>15</sup> is hydrocarbyl or substituted hydrocarbyl, and R<sup>16</sup> is hydrogen or methyl, and R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup> and R<sup>21</sup> are each independently hydrogen, hydrocarbyl substituted hydrocarbyl or a functional group.

25. The composition as recited in Claim 22 wherein (e)(iii) is derived from one or more of



wherein R<sup>14</sup> is hydrogen or methyl, R<sup>15</sup> is hydrocarbyl or substituted hydrocarbyl, and R<sup>16</sup> is hydrogen or methyl, and R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup> and R<sup>21</sup> are each independently hydrogen, hydrocarbyl substituted hydrocarbyl or a functional group.

26. The composition as recited in Claim 20 wherein (e)(iii) is derived from methyl methacrylate and optionally other copolymerizable monomers.

27. The composition as recited in Claim 20 wherein (e)(iii) is poly(ethylene terephthalate), poly(butylene terephthalate), nylon-6,6, nylon-6,  
5 polyethylene, polypropylene, a liquid crystalline polymer, polystyrene and poly(styrene-co-acrylonitrile), a polyacetal, a polycarbonates or(methyl methacrylate).